

What is claimed is:

Sub B 1

1. A method of treating a human patient having a disease, disorder or condition of the central nervous system, the method comprising obtaining a bone marrow sample from a human donor, isolating stromal cells from said bone marrow sample, and administering said isolated stromal cells to the central nervous system of said human patient, wherein the presence of said isolated stromal cells in said central nervous system effects treatment of said disease, disorder or condition.

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2. The method of claim 1, wherein said human donor is not suffering from a disease, disorder or condition of the central nervous system and wherein said human donor is syngeneic with said patient.

3. The method of claim 1, wherein said human donor is said human patient.

4. The method of claim 1, wherein said disease, disorder or condition of the central nervous system is selected from the group consisting of a genetic disease, a tumor, trauma and stroke.

5. The method of claim 4, wherein said disease, disorder or condition is injury to the tissues or cells of said central nervous system.

6. The method of claim 4, wherein said disease, disorder or condition is a brain tumor.

7. The method of claim 1, wherein said isolated stromal cells administered to said central nervous system remain present or replicate in said central nervous system.

8. The method of claim 1, wherein prior to administering said isolated stromal cells, said cells are cultured in vitro.

9. The method of claim 1, wherein prior to administering said isolated stromal cells, said isolated stromal cells are transfected with an isolated nucleic acid encoding a therapeutic protein, wherein when said protein is expressed in said cells said protein serves to effect treatment of said disease, disorder or condition.

10. The method of claim 9, wherein said therapeutic protein is selected from the group consisting of a cytokine, a chemokine and a neurotrophin.

11. The method of claim 1, wherein prior to administering said isolated stromal cells, said isolated stromal cells are transfected with an isolated nucleic acid encoding a therapeutic protein wherein when such protein is secreted by said cells said protein serves to effect treatment of said disease, disorder or condition.

12. The method of claim 11, wherein said isolated nucleic acid is operably linked to a promoter/regulatory sequence.

13. The method of claim 11, wherein said therapeutic protein is selected from the group consisting of a cytokine, a chemokine and a neurotrophin.

14. The method of claim 9, wherein said isolated nucleic acid is a wild type copy of a mutated, non-functioning or under-expressed gene, wherein said isolated nucleic acid is operably linked to a promoter/regulatory sequence and is expressed in said isolated stromal cells.

15. The method of claim 11, wherein said isolated nucleic acid is a wild type copy of a mutated, non-functioning or under-expressed gene, wherein said isolated nucleic acid is operably linked to a promoter/regulatory sequence and is expressed in to generate a protein which is secreted from said isolated stromal cells.

16. The method of claim 1, wherein prior to administrating said stromal cells, said cells are pre-differentiated by coculturing said stromal cells in the presence of a substantially homogeneous population of differentiated cells, whereby said stromal cells differentiate and acquire the phenotypic characteristics of said differentiated cells.

17. The method of claim 1, wherein prior to administration of said isolated stromal cells at least one of the steps of culturing said cells in vitro, introducing isolated nucleic acid into said cells, and pre-differentiating said cells, is performed.

18. The method of claim 1, wherein said isolated stromal cells are immunologically isolated.

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19. A method of directing the differentiation of an isolated stromal cell comprising culturing said isolated stromal cell in the presence of a substantially homogeneous population of differentiated cells whereby said isolated stromal cell differentiates and acquires the phenotypic characteristics of said differentiated cells.

20. The method of claim 19, wherein said differentiated cells are astrocytes.